Best Management Practices for Procurement, Use, and Disposition of Electronics

Guidance for Large Organizations with Substantial Computer / Electronic Resources

The following guidelines were researched, compiled, and developed by the Electronic Resource Recovery Council (ERRC) of the Recycling Alliance of Texas to help you:

$ develop purchasing practices and contracts that will give you the highest long-term return on your investment in electronic resources;
$ prolong the useful life of your equipment;
$ avoid employee and public exposure to hazardous materials;
$ develop disposition practices and contracts to recover the maximum value from surplus and end-of-life equipment;
$ protect the security of confidential / proprietary information;
$ avoid liability from the improper disposal of your equipment; and
$ demonstrate your organization's commitment to environmental stewardship.

I. Procurement

A. Select products that meet recognized standards for environmentally responsible design and minimal hazardous materials content.

1. **Energy Star - US EPA standard for energy efficiency.**
2. **TCO - Swedish product standards recognizing**
   - **minimal environmentally-hazardous substances including heavy metals and brominated flame retardants;**
   - **low emissions of dust and ozone into the work environment;**
   - **design for easy recycling; and**
   - **environmental certification of the manufacturer.**
3. **Blue Angel - The world's first eco-label, recognizing responsible products and manufacturing practices, including**
   - **resource conservation:**
   - **efficient use of fossil fuels; and**
   - **reductions in greenhouse gas emissions and impact on the climate.**
4. **RoHS (Reduction of certain Hazardous Substances) - a European Union standard scheduled to go into effect July 1, 2006.**

If compliance information is not available for the certifications above, look inside - what hazardous materials are in your electronics?

5. **Qualify vendors by requiring material safety data sheets listing concentrations of the following materials in their products:**
   - **lead**
   - **cadmium**
   - **mercury**
   - **hexavalent chromium**
   - **brominated flame retardants (PBB & PBDE)**
6. **Select features that minimize potential exposure to toxic materials and generation of hazardous waste, such as:**
   - **low mercury and long-life lamps in flat panel displays**
   - **removable, rechargeable, recyclable batteries.**

B. Look for additional features that can reduce your costs and help the environment, including:

1. **systems manufactured with refurbished components and recycled materials;**
2. **systems with modular design and easy, waste-free disassembly for upgrades, recovery of components for reuse, and recycling;**
3. **printers and copiers that use remanufactured toner cartridges and can print on both sides of the paper;**
4. **products with plastic components that are coded for recyclability; and**
5. **products that come in packaging that is (in order of preference) returnable, recycled-content, recyclable, or compostable.**

C. Evaluate the "total package" - it's more than just the hardware.

1. **Ask for online operating and service manuals (hard copies can be an additional expense) and pre-installed software.**
2. **Compare product warranties, and weigh the additional cost of an extended warranty against the cost savings of an extended replacement schedule**
3. **When leasing or purchasing new electronics, negotiate a flexible service agreement to minimize downtime. For example, request**
   - **$ flexibility for the service provider to provide used vs. new replacement parts as needed,**
   - **$ the option to opt out of the service agreement after one or two years,**
   - **$ prompt (i.e. - next business day) hardware support,**
   - **$ real-time software support, and**
   - **$ the option to request periodic hardware upgrades instead of systems replacement as needs change.**
4. **Consider purchasing equipment that the manufacturer or vendor will take back for responsible disposition when it is no longer useful to you.**

II. Use and Management:

A. Maintaining the Functionality of Your Equipment

1. **Follow the manufacturer's recommendations on equipment use and maintenance.**
2. **Use back-up power supplies for systems to avoid sudden shut-downs. Uninterruptible Power Supply (UPS) systems provide:**
   (a) protection from small power surges,
   (b) power for some time after a power loss has occurred,
   (c) automatic shutdown of equipment during long power outages,
   (d) automatic restart after a long power outage, and
   (e) short circuit protection.
3. **Install anti-spyware and anti-virus protection software to protect your system and minimize downtime.**

B. Extending the Useful Life of Your Equipment

1. **Avoid turning electronic devices on and off more often than needed.**
2. **Shut off computer monitors at night.**
3. **Regularly (at least once a year) remove dust (using compressed air or a small vacuum) from inside of desktop PCs to reduce heat build-up and extend equipment life.**
4. **Establish a "technology requirements hierarchy" as a guide for "cascading" older equipment on to users who don't require the newest technology.**
5. **Consider upgrading electronics through refurbishment rather than replacing them.**
6. **Store computers in a climate-controlled environment to avoid damage from extreme heat.**
7. **Avoid extended storage of surplus equipment to minimize storage costs, data security risks, and loss of equipment value.**

III. Disposition

A. Making the Most of Electronic Resources

In nature, waste represents lost resources and compromised environmental quality. In a business environment, waste represents lost profit. To minimize waste and gain the best return on your original investment in electronic assets, observe the following hierarchy of disposition strategies, in order of preference:

1. **Reuse**
2. **Repair**
3. **Refurbishment / Remanufacturing**
4. **Recovery of functional components**
5. **Recycling of constituent materials**
6. **Responsible disposal of hazardous and non-hazardous wastes**

The type, technology, age, and condition of your used equipment will determine which of the above strategies is most appropriate in order to recover the greatest value and minimize the cost of disposition.

B. Disposition Services

A professional provider of disposition services for electronic equipment, or "e-cycler," can apply technical expertise and market experience in managing your used electronics effectively, through a variety of services:

1. **Inventory, logistics, and handling**
2. **Equipment redeployment**
3. **Data erasure**
4. **Product remarketing**
5. **Employee sales**
6. **Charitable donations**
7. **Lease return management**
8. **Responsible disposition in compliance with all state and federal regulations.**

C. Selecting a Disposition Services Provider, or "E-Cycler"

The Texas E-cycling STandards ("TEST") were researched and compiled by the Electronic Resource Recovery Council of the Recycling Alliance of Texas to assist generators of surplus and end-of-life electronics in locating disposition service providers, or "e-cyclers" that are responsible and accountable in serving their customers' interests, protecting public health and safety, conserving resources, and preserving environmental quality.

As assurance of their commitment to these values, E-cyclers that subscribe to the TEST practices have agreed to provide their customers with a copy of the Texas E-cycling STandards, including a signed statement by an officer of the organization agreeing to abide by them as a condition of the use and display of the TEST logo and recognition by the Electronic Resource Recovery Council of the Recycling Alliance of Texas.

Large-scale generators of surplus electronic equipment (including municipalities and other organizations that sponsor public "e-waste" collection events) can incorporate the TEST as a whole or in any part into their contracts for disposition services or in their qualifications for bidders, with specific documentation required for any or all items.

The TEST logo and certificate are the property of the Electronic Resource Recovery Council of the Recycling Alliance of Texas, which reserves the right to deny their use or display to anyone who fails to document or otherwise demonstrate compliance with any of the TEST elements.